AUSTRALIAN RECENT AND TERTIARY MOLLUSCA

FAMILY MARGINELLIDAE.

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Plates xvii–xx.

INTRODUCTION.

IN the "South Australian Naturalist" 1944 the author gave a preliminary survey of the genus *Marginella* recording ninety-two Recent species from Australia. Since then C. F. Laseron 1948 has studied the New South Wales fauna and his excellent work has been published in the "Records of the Australian Museum." Opportunities afforded during work on bore material at the Mines Department of South Australia enabled me to examine many Tertiary specimens of this family. Tertiary species are small and most bore specimens are found in good condition. They are, therefore, good indicators for stratigraphic purposes.

Figures of Tate's Tertiary species reproduced here are prepared by Miss B. J. F. Newman from the type tablets in the Tate Museum, University of Adelaide, kindly lent by Sir Douglas Mawson. A number of Table Cape fossils and a magnificent range of Recent exotic species in the May collection, also a selection of Tate's Muddy Creek fossils all in the South Australian Museum provided valuable specimens for study.

From the few references listed at the end of this paper practically all information on nomenclature and descriptions of species can be obtained, and others can be traced in the Zoological Record from the dates given. Many individual localities of species from Southern Australia are recorded in the "South Australian Naturalist." Certain species are figured here, some for the first time and the rest for comparative purposes, since in a difficult family of this nature a good figure is much more satisfactory than the longest description. The animal of *M. mustellina* Angas was described by Hedley in 1916 and that of *M. weedingi* by myself in 1944.

THE GENERA.

The margin shells belong to the family Marginellidae and there are about one thousand specific names recorded, many of them synonyms. Particulars of the genera belonging to the family are now considered. It is doubtful whether any of the named "genera" other than *Marginella* used in the wide sense are represented in Australia. *Marginella* itself has a dozen "subgenera" and it would be difficult and probably inaccurate to even allot Australian species to any of these subgenera.

Genus PERSICULA Schumacher, 1817.

The genotype is *P. persicula* Linne from Cape Verde Island off West Africa. Other species are found in the West Indies, Pacific Coast of Mexico, Brazil, Mediterranean, Honduras, Borneo and California. *Marginella ovulum* Sowerby, placed in my Group E. and *Marginella deburghi* Adams, *Marginella pulchella* Kiener belonging to Group F. have sometimes been placed in this genus.

Genus RABICEA Gray, 1857.

The genotype is *R. interrupta* Lamarck, from the West Indies. The few species belonging to this genus, regarded as a section of *Persicula* are distinct from any Australian *Marginella*.

Genus GIBBERULA Swainson, 1840.

The genotype is *G. oryza* Lamarck from Senegal. It is probably a subgenus of *Persicula*. The species *Marginella infelix* and *M. angasi* placed in my Group D., have sometimes been placed in this genus.

Genus CYSTICUS Stimpson, 1865.

The genotype is *C. capensis* Stimpson from South Africa. The genus is allied to *Gibberula* and there are no Australian species.

Genus GIBBERULINA Monterosato, 1884.

The genotype is *G. clandestina* Brocchi from West Africa and the Mediterranean. A synonym is *Mervia* Dall 1920, also *Marginellopsis* Bavay 1911. Genotype *M. serrei* Bavay is also closely related. There are no Australian species.

Genus MARGINELLONA Martens, 1903.

The genotype is *M. gigas* Martens. Sombrero Channel, Nicobars, dredged 805 m. This genus probably belongs to the Volutidae.

RECENT SPECIES.

Genus MARGINELLA Lamarck, 1801.

The genotype is *Voluta glabella* Linne 1758 from West Africa. The genotype is a large shell up to two inches in length, smooth, polished, without surface sculpture, spire elevated of about four whorls, colour pattern variegated with a subsutural narrow dark brown band. It ranges down the coast of West Africa, Canary Islands and is a fossil in the late Tertiary of Italy. A synonym of this genus is *Pseudomarginella* Maltzan, 1880. There are a number of "sections" "subgenera," etc., which are here listed with the type species and its locality following.

Canalispira Jousseaume, 1875. *C. olivellaeformis* Jousseaume, West Africa.
Crystospira Hinds, 1844. *C. quinqueplicata* Lamarck. Bay of Bengal.
Glabella Swainson, 1840. = *Prunum* H. & A. Adams, 1853. = *Egociena* Jousseaume, 1875. *G. prunum* Gmelin. West Indies.
Closia Gray, 1857. *C. sarda* Kiener. Ceylon.
Bullata Jousseaume, 1875. = *Volutella* Swainson, 1820, not Perry, 1811, *B. bullata* Born. Brazil.
Hyalina Schumacher, 1817. = *Neovolvaria* P. Fischer, 1883. *H. pallida* Linne. West Indies.
Balanetta Jousseaume, 1875. *B. baylei* Jousseaume (error for *baylii* 1875). Loc?
Volvarina Hinds 1844. *V. triticea* Lamarck. Senegal.
Serrata Jousseaume, 1875. *S. serrata* Gaskoin. Mauritius.
Eratoidea Weinkauff, 1878. *E. margarita* Kiener. West Indies.
Faba P. Fischer 1883. *F. faba* Linne. Senegambia.

Australian species have been placed in some of these "genera", "subgenera" or "sections" but no satisfactory classification has so far been formulated. As in my previous paper I separate the Australian *Marginella* species into "Groups." This method of classification seems to be the only solution and it has the approval of other Conchologists. Mr. C. F. Laseron, 1948, writes: "Cotton in his paper has used such groups as a guide to the student of local species, and that is all that is necessary, at least until our knowledge of their anatomy and life history is much further advanced." Most earlier Tertiary species of *Marginella* both European and Australian seem to belong to the Group having the triangular shape and laterally expanded outer lip.

Four new Recent species are here described.

MARGINELLA NEWMANAE sp. nov.

Pl. xx.

Holotype. W.A. Esperance. Reg. No. D. 14229 S.A. Museum. Shell large, pyriform to subovate, cream colour; columella convex above, slightly concave below; plaits seven small, the lower two stronger than the others; outer lip thickened, curved, rising a little above the level of the spire, finely denticulate anteriorly; aperture narrow. Height 9 mm., diameter 5 mm.

Loc. Beachport 110 fathoms, 150 fathoms, 200 fathoms, Cape Jaffa 130 fathoms, Neptune Islands 104 fathoms, Gulf St. Vincent 14 fathoms, Cape Borda 60 fathoms, W.A., forty miles west of Eucla, 120 fathoms, 72 fathoms, Esperance.

Remarks. More pyriform than *M. porcella* and with more columella plaits, and the outer lip is very finely denticulate anteriorly.

MARGINELLA BACA sp. nov.

Pl. xx.

Holotype. Tas., Cape Pillar 100 fathoms. Reg. No. D. 14227 S.A. Museum. Rather narrowly ovate, fairly thin, smooth, lustrous white; spire short, apex large, covered with a pad of enamel; mouth long and narrow a little broader anteriorly than posteriorly; outer lip thin but a little thickened within; columella with three plaits. Height 4·3 mm., diameter 2·5 mm.

Remarks. As mentioned by Laseron this Tasmanian species is quite distinct from *M. agapeta*. *M. baca* is narrower and more fragile, but it belongs to the same group as *M. agapeta*.

MARGINELLA SICA sp. nov.

Pl. xix.

Holotype. W.A., Eucla, 200 fathoms. Reg. No. D. 14230 S.A. Museum. Shell small, narrow, pyriform, smooth, shining, white; spire rather exsert, whorls four, body whorl angled at the shoulder, sharply tapering anteriorly; columella almost straight with four, strong, spaced plaits; outer lip strongly thickened and widely reflected, obscurely irregularly denticulate on the inner edge; aperture long and narrow, the space between the outer lip and columella remaining the same for the entire length; suture simple. Height 5 mm., diameter 2·9 mm.

Loc. W.A., Eucla 72, 80, 100 and 200 fathoms, S.A., Newland Head 104 fathoms, Beachport 110 fathoms.

Remarks. The shell is like a minature *M. vercoi* but it has simple sutures, not emarginate as in that species, and the outer lip is obsoletely denticulate and has not the six regular denticles seen on the outer lip of *M. vercoi*.

Pl. xx.

MARGINELLA PATRIA sp. nov.

Holotype. W.A., Hopetoun, 35 fathoms. Reg. No. D. 14228, S.A. Museum. Shell small, narrowly biconic, smooth, shining, white; spire short; whorls three, body whorl shouldered, tapering very gradually anteriorly; aperture narrow; outer lip moderately thickened, very finely denticulate; columella with four weak plaits. Height 4 mm., diameter 2·3 mm.

Loc. W.A., Hopetoun, 35 fathoms, S.A. Neptunes 104 fathoms, Cape Borda 55 fathoms.

Remarks. The species resembles *M. caducocincta* but it is narrower, has weaker columella plaits, no colour bands and the outer lip is very finely denticulate. There is a tendency to develop accremental striae which are visible with the × 10 lens. On examining specimens of *M. caducocincta* cotypes from Tasmania it seems probably from the fact that some are narrower and without colour bands that *M. patria* occurs there, too. The Western Australian species here described was originally identified as *M. caducocincta*.

SUMMARY OF RECENT SPECIES.

GROUP A.

Shell with prominent spire, smooth, not colour banded, angled at the shoulder or convex. Typical species, *Marginella muscaria* Lamarck.

M. muscaria Lamarck 1822. Tas., Maria Island (type). Vict., N.S.W. The largest species of this group.

M. johnstoni Petterd 1884. Tas., N.E. Coast (type). Vict., N.S.W., S.A., beach to 55 fathoms. The species lives in shallow water and is fairly common, rarer dredged. Smaller and less strongly developed features than *M. muscaria.*

M. tasmanica Tenison Woods 1875. Tas., Long Bay (type). Vict., N.S.W. Smaller and narrower than *M. muscaria.*

M. tridentata Tate 1878. S.A., Aldinga (type), beach down to 300 fathoms. W.A., beach down to 72 fathoms. Narrow conical shape, three plaits, denticulated outer lip.

M. mixta Petterd 1884. Tas., South and Eastern Coasts (type). Separable from *M. tridentata* by the lack of denticulations on the outer lip, more delicate yellowish brown shell.

M. pygmaeoides Singleton 1937. Vict., Port Phillip (type). Tas., S.A., beach to 22 fathoms.

M. schoutanica May 1913. Tas., three miles east of Schouten Island, 40 fathoms (type). Vict., N.S.W., S.A., 62 to 130 fathoms. Narrower than *M. pygmaeoides* with four strongly ascending plaits reaching half the way up the columella.

M. consobrina May 1911. Tas., seven miles east of Cape Pillar, 100 fathoms (type). Outer lip convexly curved, four narrow plaits, upper one thin, almost invisible from the front.

M. vercoi May 1911. Tas., seven miles east of Cape Pillar, 100 fathoms (type). Broadly shouldered over the aperture, rounded whorls, columella excavate and bearing four plaits, smaller and wider spaced as they ascend, inner edge of outer lip with six denticles near the middle of its length.

M. sica sp. nov. W.A., Eucla, 80 fathoms. Like a miniature *M. vercoi.*

M. inconspicua Sowerby 1846. N.S.W., Ballina (type). Tas., Vict. Recognised by J. R. Le B. Tomlin as belonging to the Sydney fauna. Smaller and shorter spired than *M. pygmaeoides.* There are three obscure pale brown spiral colour bands on good specimens. *M. inconspicua* Nevill 1874, Mauritius, is a different species and it is correctly named *M. nevilli* Jousseaume 1875.

M. victoriae Gatliff and Gabriel 1908. Vict., Western Port, dredged (type). N.S.W. Small, white, shining smooth, much smaller than *M. pygmaeoides.*

M. translucida Sowerby 1846. N.S.W. (type?). Larger than *M. pygmaeoides.* A synonym is *M. volutiformis* Reeve 1865. N.S.W. (type).

M. alta Watson 1886. Qld., Raine Island, Cape York, 155 fathoms (type). Larger and narrower than *M. valida,* mouth wider.

M. carinata Smith 1891. N.S.W., off Sydney 410 fathoms (type). Angle of the whorls carinate.

M. fusiformis Hinds 1844. East Indies, Strait of Malacca, 17 fathoms (type) Qld. Long, narrow and fusiform.

M. humerica Laseron 1948. N.S.W., Port Macquarie, 12 fathoms (type). Close to *M. translucida,* but *M. humerica* is larger and has a larger aperture and more prominent shoulder.

M. punicea Laseron 1948. N.S.W., Jervis Bay (type). The species seems close to *M. tasmanica* but the outer lip is less prominent at the shoulder.

M. pipira Laseron 1948. N.S.W., Twofold Bay, 60 fathoms (type). Somewhat intermediate in shape between *M. punicea* and *M. tasmanica.*

M. quinqueplicata Laseron 1948. N.S.W., Twofold Bay, 5 fathoms (type). This species resembles *M. turbinata* but has five plaits.

GROUP B.

Shell with prominent spire, axial plicae on the shoulder of the whorls, which are angled or convex above. Typical species *Marginella formicula* Lamarck. "*Prunum*" H. & A. Adams 1853 is of this shape.

M. formicula Lamarck 1822. Tas., Maria Island (type). Vict. Spire exsert whorls angled, columella four plaited and inner lip smooth, plicate body and spire whorls.

M. georgiana May 1915. Tas., Southport, near George III. Reef, 15 fathoms (type). Differs from *M. formicula* in the more delicate, much narrower shell, much less strongly axially plicate, and longer in the spire.

M. praetermissa May 1916. Tas., East Coast (type). Vict. Bigger and thicker than *M. formicula*, axial plicae are less developed. May's cotypes are from Eagle Hawk Neck.

M. leia Cotton 1944. S.A., Beachport, 150 fathoms (type). This species is smaller than *M. pattisoni* and has the appearance of being perfectly smooth and polished in the typical form, though under × 10 magnification almost obsolete axial plications may be discerned, while in the other extreme form the plications are just visible to the naked eye.

M. turbinata Sowerby 1846. N.S.W., Middle Harbour, Port Jackson (type), beach to 35 fathoms. Tas., Vict. Slightly plicated on the shoulder, turbinate in shape, outer lip thick, smooth, angulated posteriorly. Angas located the species as from the above type locality. On the back of the type tablet of *M. turbinata* in the British Museum is "*M. albina* Gaskoin" and that name is regarded as a synonym though Gaskoin incorrectly gave N.W. Australia as the type locality.

M. pattisoni Cotton 1944. S.A., Encounter Bay (type), alive in shallow water. This species differs from *M. turbinata* in being more pyriform, wider, white in colour and smaller.

M. pusilla Laseron 1948. N.S.W., Twofold Bay, 60 fathoms (type). Smaller than *M. turbinata* but approaching *M. pattisoni* which is a somewhat larger, shallower water species.

GROUP C.

Shell with very long spire giving a biconic shape, smooth, colour banded, plaits three or four on the lower half or middle of the columella. Typical species *Marginella maugeana* Hedley.

M. maugeana Hedley 1915. Tas., seven miles east of Cape Pillar, 100 fathoms (type). N.S.W. Narrower than *M. mayi* with weaker, closer plaits situated more towards the middle of the columella. *M. maugeana* is a new name for *M. gracilis* May 1911, not Adams 1850.

M. gabrieli May 1911. Tas., seven miles east of Cape Pillar, 100 fathoms (type). Vict., S.A. beach to 40 and 150 fathoms. N.S.W. Small, with narrow orange bands.

M. caducocincta May 1916. Tas., Thouin Bay, 10 fathoms (type). Vict. Not typical of the group, but it is more pyriform and shorter spired. Faintly colour banded or unicoloured. S.A. and W.A. specimens are in poor condition and their identification is doubtful.

M. lodderae May 1910. Tas., seven miles east of Cape Pillar, 100 fathoms (type). S.A. 100 fathoms to 104 fathoms. W.A. Fusiform, spire long.

M. dentiens May 1911. Tas., seven miles east of Cape Pillar, 100 fathoms (type). More cylindrical in shape than *M. lodderae,* inner lip denticulate.

M. kemblensis Hedley 1903. N.S.W., Port Kembla, 63 to 75 fathoms (type). Tas. The tall spire and the tooth on the outer lip distinguish this species. Some are faintly three banded with pale brown.

M. jaffa Cotton 1944. S.A., Cape Jaffa, 130 fathoms (type). S.A., 110, 150, and 200 fathoms. W.A. This species differs from *M. kemblensis* in having a wider and longer aperture, and is less strongly developed in all respects. A macromorph from the type locality compares in size with the adult *M. kemblensis* but the distinguishing features mentioned are still present in this specimen.

M. allporti Tenison Woods 1876. Tas., Long Bay, D'Entrecasteaux Channel (type). Vict. S.A., dredged 5 fathoms to 200 fathoms. W.A. More convex shape than *M. kemblensis,* thicker shell, and shorter spire. Orange banded, and a tooth in the inner lip. The species was listed previously from Cape Wiles only in S.A., and not at all from W.A.

M. mayi Tate 1900. Tas., Frederick Henry Bay (type). N.S.W., Vict., S.A., 15 fathoms to 300 fathoms. W.A. South Australian specimens are translucent horn coloured in life, spire one-third the length of the shell, accremental striae visible, and rust coloured colour bands. The length and breadth vary, and the outer lip may be smooth or finely denticulate.

M. walkeri Smith 1899. Baudin Island and Holothuria Banks, N.W.A. (type). Long and biconical, spire long, four plaits on the columella, outer lip denticulate.

M. patria sp. nov. W.A., 35 fathoms, Hopetoun. S.A. Related to *M. caducocincta* but narrower and having weaker columella plaits and no colour bands.

M. cuneata Laseron 1948. N.S.W., Twofold Bay, 5 fathoms to 20 fathoms (type). This species is most nearly related to *M. jaffa* but is larger and has no tooth on the inside edge of the outer lip margin.

GROUP D.

Shell with very short spire, subovate, smooth unicoloured. Typical species *Marginella olivella* Reeve 1865.

M. olivella Reeve 1865. N.S.W., Port Jackson (type). Shell narrow with nearly straight sides, shoulder at top of aperture rather square.

M. connectans May 1911. Tas., seven miles east of Cape Pillar, 100 fathoms (type). Vict. S.A., 55 fathoms to 104 fathoms. Somewhat cylindrical in shape and intermediate between *M. shorehami* and *M. angasi*. Two specimens have been picked out from the Verco dredgings.

M. freycineti May 1916. Tas., Thouin Bay, 40 fathoms (type). Vict. S.A., 40 fathoms to 200 fathoms. Smaller than *M. connectans,* less cylindrical in shape, longer spire and three instead of four plaits on the columella.

M. incerta May 1920. Tas., Thouin Bay, 40 fathoms (type). Differs from *M. freycineti* in the longer spire, more curved columella, with only two plaits and the broader though similar sized shell.

M. agapeta Watson 1886. N.S.W., Port Jackson, 35 fathoms (type). Tas. Vict. Larger and narrower than *M. freycineti,* but having three plaits. There are two specimens labelled "Port Jackson" in the S.A. Museum collection. They are typical.

M. eucla Cotton 1944. W.A., eighty miles west of Eucla, 80 fathoms (type), Hopetoun. S.A., 10 fathoms to 200 fathoms. Smaller than *M. agapeta,* more delicate, three subequal plaits on the columella.

M. altilabra May 1911. Tas., ten miles east of Schouten Island, 80 fathoms (type). S.A., 40 fathoms to 200 fathoms. Narrower anteriorly than *M. stilla,* lip angle very high and great forward curve, weaker plaits and smooth outer lip margin. (Hedley as *M. stilla* from S.A., Cape Wiles, 100 fathoms).

M. stilla Hedley 1903. N.S.W., Port Kembla, 63 fathoms to 75 fathoms (type). Vict. The outer lip curves out from the body of the shell and does not project at an angle as in *M. altilabra.*

M. diplostreptus May 1916. Tas., Port Esperance 24 fathoms. (Type *M. biplicata* Tate and May 1900). S.A., 10 fathoms to 100 fathoms. Vict., W.A. Typically with two plaits at the posterior end of the columella. S.A. specimens, like those recorded from Black River Beach, North-East Tasmania, near Circular Head, have a tendency to develop a third plait, which is weak and posterior to the other two.

M. subbulbosa Tate 1878. S.A., Wauralte, West Coast (type). S.A., beach to 200 fathoms. N.S.W., W.A., Vict. Consistently smaller and more rotund than *M. beddomei*.

M. beddomei Petterd 1884. Tas., South Coast (type). N.S.W. This common Eastern Tasmanian shell has been confused with *M. subbulbosa*. It is lirate within the aperture.

M. strangei Angas 1877. N.S.W., Sow and Pigs Reef, Port Jackson (type). Vict. Shorter than *M. subbulbosa*, with strong plaits on the columella and a thickened outer lip which is not denticulate.

M. subauriculata May 1916. Tas., Thouin Bay, 40 fathoms (type). Vict. S.A., 40 fathoms to 150 fathoms. W.A. Short and broad, very variable posterior angle of the outer lip produced a little posteriorly, spire minute, six plaits on the columella. Cape Pillar shells are larger, while S.A. specimens are narrower, showing a little more spire.

M. lubrica Petterd 1884. Tas., Brown's River 6 fathoms (type). Outer lip somewhat convex, two plaits.

M. angasi Crosse 1870. N.S.W., Port Jackson (type). Tas. Vict. Slightly trigonal in shape, plaits four to seven, more developed anteriorly, weaker posteriorly. Synonyms are *M. simsoni* Tate & May 1900, Tas., Long Bay, 7 fathoms, and *M. minima* Petterd 1884, Tas. There is also an elongate variant of the *M. simsoni* in Tasmania.

M. shorehami Pritchard and Gatliff 1899. Vict., Shoreham Beach, Western Port Bay (type). S.A., 10 fathoms to 110 fathoms. W.A. Narrower than *M. angasi*, variable. Plaits in the adult number from two to thirteen.

M. ringens May 1919. Tas., Kelso, Tamar Heads (type). Larger aperture and broader than *M. angasi*, outer lip denticulate.

M. obesula May 1919. Tas., Frederick Henry Bay (type). Differing from *M. lubrica* in the rounder shell, sharper spire and denticulate outer lip. It may be only a variant.

M. branchia Watson 1886. Qld, Raine Island, Torres Strait, 155 fathoms (type). Somewhat like *M. freycineti* May 1916 but with four plaits.

M. pachia Watson 1886. Qld., Raine Island, Torres Strait, 155 fathoms (type). Resembles *M. angasi* but shorter with a more curved mouth.

M. elliottae Cotton 1944, *nom. nov.* for *M. denticulata* Tate 1878, not Link 1807 nor Conrad 1830. S.A., Wauralte, West Coast (type loc.). S.A., beach to 300 fathoms. Small. Less trigonal in shape than *M. angasi*, denticulate outer lip, four plaits.

M. infelix Jousseaume 1875. N.S.W. (type). Vict. Shell broader than *M. olivella* and somewhat rounded. A synonym is *M. simplex* Reeve 1865 Aust. (type) not Edwards 1852.

M. procella May 1916. Tas., South East, Storm Bay, 24 fathoms (type). Vict. There is a sinistral specimen in the S.A. Museum collection. This Tasmanian species is smaller and differently shaped from *M. infelix* or *M. olivella.*

M. newmanae sp. nov. W.A., Esperance (type). S.A., 14 to 200 fathoms. The species is described above.

M. frequens Laseron 1948. N.S.W., Sydney, 30 to 50 fathoms (type). Smaller, whiter than *M. strangei.*

M. binivitta Laseron 1948. N.S.W., Cape Jervis Bay (type). Has a still higher and more expanded aperture than *M. antilabra* May.

M. sinuata Laseron 1948. N.S.W., Point Halliday (type). Related to *M. frequens* but *M. sinuata* has stronger and more widely spaced columella plaits.

M. sinapi Laseron 1948. N.S.W., Sow and Pig Reef (type). Has a narrower aperture than *M. subbulbosa.*

M. parsobrina Laseron 1948. N.S.W. Cookhaven (type). Differs from *M. sinapi* in having a narrow sloping shoulder at the top of the aperture.

M. nielseni Laseron 1948. N.S.W., Bateman Bay, 25 to 60 fathoms (type). Resembles *M. flindersi* Pritchard & Gatliff 1899 but the present species has three instead of two columella plaits.

M. melania Laseron 1948. N.S.W., North Harbour, Port Jackson (type). The animal is black, not bright red as in *M. angasi* which the shell features recall, except that in *M. melania* the shoulder of the aperture is a little higher.

M. baca sp. nov. Tas., Cape Pillar 100 fathoms (type). Described above. The species is narrower and more delicate than *M. agapeta* from N.S.W.

GROUP E.

Shell with depressed spire, outer lip produced beyond or level with the posterior end of the body of the shell. Typical species *Marginella tomliniana* May.

M. tomliniana May 1917. Tas., Thouin Bay, 40 fathoms (type). Long and narrow, outer lip extending well posteriorly, spire hidden. New name for *M. auriculata* May 1916.

M. indiscreta May 1911. Tas., Cape Pillar, 100 fathoms (type). S.A., 55 fathoms. Outer lip more produced posteriorly than in *M. matericula.*

M. cratericula Tate and May 1900. Tas., D'Entrecasteaux Channel, 10 fathoms (type). N.S.W., Vict., S.A., 35 fathoms to 100 fathoms. Outer lip almost level with top of shell posteriorly.

M. concamerata May 1918. Tas., Frederick Henry Bay (type). Columella with six plaits, outer lip not produced beyond the body of the shell posteriorly, spire hidden. New name for *M. albomaculata* May 1911, not Schluter 1838.

M. ovulum Sowerby 1846. Australia (type *M. pisum*). N.S.W., Port Jackson (type). Qld. Shells from Port Jackson and Brisbane are wider and more oval shaped than *M. petterdi.* Angas in 1867 recognized this species, as from N.S.W., and Port Jackson is here accepted as the type locality. Syn. *M. pisum* Reeve 1865.

M. petterdi Beddome 1883. Tas., Kelso Bay, Tamar River, 17 fathoms (type). S.A., 10 fathoms to 200 fathoms. Vict., W.A. Narrower than *M. ovulum* and tendency to denticulation of the outer lip. Syn. New name for *M. cypraeoides* Tenison Woods 1878, not Anton 1839, *M. tenisoni* Pritchard 1900.

M. minutissima Tenison Woods 1876. Tas., Long Bay, D'Entrecasteaux Channel (type). N.S.W. Minute, oval with three plaits. Syn. *M. pumilio* Tate and May 1901, new name for *M. minutissima,* not Michelin (Ubi?).

M. thouinensis May 1916. Tas., Thouin Bay, 40 fathoms (type). S.A., 55 fathoms. Wider than *M. minutissima,* nine plaits.

M. multidentata May 1920. Tas., D'Entrecasteaux Channel, 10 fathoms (type). Shorter, wider aperture and more numerous plaits than *M. thouinensis,* denticulate outer lip.

M. alternans Pritchard and Gatliff 1899. Vict., Shoreham Bay, Western Port (type). S.A., 10 fathoms to 110 fathoms. N.S.W. Minute, oval, numerous plaits.

M. inaequidens May 1913. Tas., Cape Pillar, 100 fathoms (type). S.A., 10 fathoms to 110 fathoms. Two plaits, the upper very weak.

M. bucca Tomlin 1916. Tas. (type probably North). Ovoid, one plait. Syn. *M. ovulaeformis* Tate and May 1900, not Orbigny 1842, *M. ventricosa* Hedley 1903, not Fischer 1807.

M. cymbalum Tate 1878. S.A., Aldinga Bay (type), 10 fathoms to 150 fathoms. Vict., Tas., W.A. Something like *M. bucca* in shape but larger and having six anterior stout plaits and six weaker ones following on posteriorly.

M. flindersi Pritchard and Gatliff 1899. Vict., Shoreham Beach, Western Port (type). S.A., 10 fathoms to 62 fathoms. Narrow, with two plaits, and sometimes a rudimentary third plait posteriorly.

M. cylchnella May 1918, new name for *M. microscopica* May 1911, not Tapparone-Canefri 1887. Tas., Cape Pillar, 100 fathoms (type). Minute, very narrow, with three plaits.

M. erma Cotton 1944. Tas., Cape Pillar, 100 fathoms (type). A peculiar ovoid species with five plaits diminishing posteriorly. It is a wider shell than that of *M. thouinensis*.

M. nympha Brazier 1894. N.S.W., Green Point, Sydney (type). Vict. Similar to *M. minutissima*, but with four plaits.

M. halli Pritchard and Gatliff 1899. Vict., Shoreham Beach, Western Port (type). Has the outer lip projected posteriorly, like *M. cymbalum*.

M. problematica Gatliff and Gabriel 1916. Vict., Western Port 8 to 10 fathoms (type). S.A. Separated from *M. halli* by the flattened summit and more triangular shape, and from *M. inaequidens* by the less cylindrical contour, solidity and disposition of the stronger plaits.

M. amphora Laseron 1948. N.S.W., Point Halliday, 8 to 10 fathoms (type). This species differs from *M. multidentata* in having a broad, nearly truncate top of the body whorl which in *M. multidentata* is greatly restricted.

M. multiplicata Tate and May 1900. Tas. (type). N.S.W. This is separable from *M. alternans*, having a different shape.

M. anxia Hedley 1909. Qld., Hope Island (type).

M. stiria, nom. mut. This name is here substituted for *M. rotunda* Laseron 1948 described from N.S.W., Cookhaven, 30 to 35 fathoms, pre-occupied by the name *M. rotunda* May 1922 for a fossil from Table Cape. The species is somewhat like *M. ovulum*, but is less than half the size and broader.

GROUP F.

Shell long and narrow, cylindrical, with short spire and typically colour banded. Typical species *M. mustellina* Angas.

M. mustellina Angas 1871. N.S.W., Sow and Pigs Reef, Port Jackson (type). Tas. (type *M. pellucida*), Blackman Bay (type *M. stanislas*). Vict. Narrow and colour banded. The edge of the outer lip is weakly denticulate anteriorly on the specimen figured. Syn. *M. stanislas* Tenison Woods 1877. *M. stanislaus* Tryon 1883 error for *M. stanislas* Tenison Woods 1877. *Erato pellucida* Tenison Woods 1877.

M. vincentiana Cotton 1944, for *M. albida* Tate 1878, not Lamarck 1822. S.A., Marino (type), beach to 200 fathoms. Tas., 100 fathoms, off Cape Pillar. W.A. Differs from *M. mustellina* in having the spire more covered and in being unicoloured, smaller, five plaited, and showing regular accremental striae.

M. hedleyi May 1911. Tas., Cape Pillar, 100 fathoms (type). Larger than *M. mustellina*, wider and orange banded.

M. columnaria Hedley and May 1908. Tas., Cape Pillar, 100 fathoms (type). S.A., 12 fathoms to 100 fathoms. W.A. Elongate and narrow, three plaits.

M. caledonica Jousseaume 1877. New Caledonia (type). Somewhat resembling *M. columnaria*.

M. pericalles Tomlin 1916 nom. nov. for *M. guttula* Reeve 1865 (type loc.?) not Sowerby 1837. *M. guttula* Reeve is listed from Queensland by Hedley, but I have not seen specimens from Australia. It seems to be allied to *M. mustellina*.

M. philippinarum Redfield 1846, nom. nov. for *M. avena* Sowerby 1846, not Kiener 1834. Philippines, Island Bolhol (type). W.A., N.W., Holothuria Banks. A long, narrow banded species.

M. pulchella Kiener 1830 (type loc.?) W.A., Cape Lewin (type *M. fulgurata*). Qld., S.A., beach to 130 fathoms. Longitudinal orange zig-zag lines. Common in W.A. Syn. *M. fulgurata* Hedley 1911.

M. deburghi Adams 1864. W.A., Swan River (type), beach. A large and distinctive species, white with larger and smaller chestnut spots in alternate rows.

M. occidua Cotton 1944. W.A., Albany (type), beach to 22 fathoms. This distinctive Australian species has been incorrectly labelled *M. navicella* Reeve, *M. rubella* Adams, *M. obscura* Reeve.

M. haswelli Laseron 1948. N.S.W., 22 miles east of Narrabeen, 80 fathoms (type). Near to *M. occidua*, but *M. haswelli* is larger and has a finely denticulate inner margin of the outer lip.

GROUP G.

Shell with short spire, triangular, outer lip laterally expanded posteriorly, forming a right angle. Typical species *Marginella geminata* Hedley.

M. geminata Hedley 1912. N.S.W., Cape Byron (type). Tas., Vict. Triangular in shape.

M. gatliffi May 1911. Tas., Schouten Island, 40 fathoms (type). Shorter and smaller than *M. geminata*.

M. malina Hedley 1915. N.S.W., Narrabeen, 80 fathoms (type). Small, thin, glossy, subtriangular.

M. brazieri Smith 1891. N.S.W., off Sydney, 410 fathoms (type). Less triangular than *M. gatliffi*.

M. whani Pritchard and Gatliff 1900. Vict., Port Fairy (type). S.A., 55 fathoms. N.S.W. S.A., 55 fathoms. Outer lip denticulate.

M. ochracea Angas 1871. N.S.W. (type), Port Jackson (type *M. metcalfei*). Triangular, sharp spire, four plaits. Synonym *M. metcalfei* Angas 1877.

M. borda Cotton 1944. S.A., Cape Borda, 55 fathoms (type), 17 fathoms to 130 fathoms. W.A. A more solid shell than *M. ochracea*, with longer spire and smooth outer lip.

M. australis Hinds 1844. W.A., North West (type). Orange, brown, lip and aperture orange. More solid than *M. ochracea* and *M. borda*.

M. liturata Menke 1843. W.A. (S.W. Aust. ? type). With angulated longitudinal lines broken into spots. Specimens examined from S.W. Aust. are beach worn and without colour.

M. laevigata Brazier 1877. Qld., Darnley Island, Torres Strait, 10 fathoms, 20 fathoms, 30 fathoms (type), Raine Island, Cape York, 155 fathoms (type *M. valida*). New Guinea, 7 fathoms. W.A., beach. N.W. Aust. Recalling *M. geminata*, but shorter spired. Synonyms are *M. valida* Watson 1886, and *M. baudinensis* Smith 1899, Baudin Is.

M. weedingi Cotton 1944. Backstairs Passage, 20 fathoms (type), 40 fathoms to 200 fathoms. The species lives down to 20 fathoms. Rare and dead in deeper water. The shell is larger and narrower than *M. geminata* and has plaits resembling somewhat those of *M. laevigata*.

M. crescere Laseron 1948. N.S.W., Point Halliday, 8 to 10 fathoms. Much broader and with a more pronounced shoulder than in *M. ochracea*.

M. laeviplicata Laseron 1948. N.S.W., Crookhaven, 30 to 35 fathoms (type). The present species has weaker columella plaits than has *M. ochracea*.

PLEISTOCENE AND SUB-RECENT SPECIES.

A number of species are found in Pleistocene deposits, and stranded beaches, some of them away from their present distribution. Among Woakwine Range material from certain sites are found large specimens of *M. muscaria*, now not living in South Australia. In the Tintinara bore at a depth of 100 feet were found numerous large specimens of *M. formicula* and *M. turbinata*, the former still living in Eastern Victoria and the latter in New South Wales on the east coast of Australia from New South Wales to Tasmania.

TERTIARY SPECIES.

Apparently the family *Marginellidae* is not represented in rocks older than the Eocene. The Australian Tertiaries have so many species in comparison to the Tertiaries in other parts of the world that this region may have been the chief centre of distribution. Tate 1878 described but did not figure eighteen Tertiary species, placing them in two groups, defined as follows:

1. Outer lip smooth; columella quadriplicate.
2. Outer lip dentate.

The last group was subdivided into three sections:

A. Columella quadriplicate.
B. Columella quinqueplicate.
C. Columella multiplicate.

The different species were then classified by their shape. As mentioned before, I have found the number of plaits an unsatisfactory feature in major classification and the same applies to the presence or absence of denticles in the outer lip, though both these features are good specific guides. In order to compare better the Australian Tertiary species with the Recent ones, they are here grouped under a similar plan to that used for classifying the Recent species. The type localities follow the name of each species. A few new species from bores in the Adelaide Plains (Adelaidean) are here described and most appear to be distinct from local, Victorian, or Tasmanian Miocene species. There are also a few new species described here from other fossil exposures.

MARGINELLA CLISIA sp. nov.

Pl. xvii.

Holotype. Vict., "Spring Creek" = Bird Rock, Vict., Janjukian. Reg. No. P 8782 S.A. Mus.

Shell small, rather thick, subtriangular, outer lip a little expanded, spire a little exsert with a large blunt protoconch, body whorl slightly constricted anteriorly, outer lip thickened, smooth, aperture wide, columella with four oblique plaits, the anterior pair very oblique. Height 4 mm., width 2 mm.

Remarks. *M. clisia* is a slightly larger species than *M. micula* and it has a more exsert blunt-topped spire.

MARGINELLA PHYSA sp. nov.

Pl. xviii.

Holotype. S.A. Mines Dept., Bore 69, Adelaide Plains, 320 feet, Adelaidean. P. 8792 S.A. Mus.

Shell rather globose and thick with a short blunt spire, wide aperture and rather convex outer lip; columella a little concave, with four narrow oblique plaits occupying the anterior half; edge of the outer lip narrowly thickened and smooth. Height 4 mm., diameter 3 mm.

Remarks. Somewhat like *M. hordeacea* but more globose.

MARGINELLA REGULA sp. nov.

Pl. xviii.

Holotype. Aldinga, Lower Beds. P. 8785 S.A. Mus.

Shell rather large and thick, spire fairly long with angulated whorls; aperture short; columella with five weak plaits, the posterior one almost obsolete; outer lip regularly denticulate. Height 7·5 mm., diameter 3·8 mm.

Remarks. Differs from *M. muscaroides* in being thickened and having a strongly denticulate outer lip.

MARGINELLA META sp. nov.

Pl. xviii.

Holotype. S.A. Mines Dept., Bore 21, Adelaide Plains, 400 feet, Adelaidean. Reg. No. P. 8795 S.A. Mus.

Shell fusiform with a long spire; protoconch blunt at the top; columella concave with four narrow but strong plaits; outer lip thickened with four or five strong denticles on the inner edge; body whorl about four times as high as the spire. Height 4 mm., diameter 2 mm.

Remarks. This species resembles *M. altispira*, but it has a shorter spire and more strongly denticulate outer lip, but it has not the single large posterior denticle on the outer lip.

MARGINELLA DOMA sp. nov.

Pl. xviii.

Holotype. S.A. Mines Dept., Bore 28, Adelaide Plains, 360 feet, Adelaidean. P. 8793 S.A. Mus.

Shell ovate, thick, polished, spire not visible above the body whorl; columella gently convex with five moderately developed plaits on the anterior half; outer lip thickened on the margin, which is almost entirely covered with numerous fine denticles. Height 5·2 mm., diameter 3·9 mm.

Remarks. The species is larger than *M. moana* and the outer lip reaches up to, but not above, the top of the spire. The two anterior plaits are much stronger than the others.

MARGINELLA CLIMA sp. nov.

Pl. xviii.

Holotype. S.A. Mines Dept., Bore 21, Adelaide Plains, 400 feet, Adelaidean. P. 8797 S.A. Mus.

Shell rather globose, smooth and polished; shoulder of body whorl rounded; columella concave anteriorly with four oblique plaits occupying the anterior half; outer lip well thickened, smooth and wide medially, forming a moderately wide aperture; spire a little exsert. Height 5·2 mm., diameter 3·7 mm.

Remarks. Similar to *M. micula* but larger and having a less gradate spire.

MARGINELLA METULA sp. nov.

Pl. xviii.

Holotype. S.A. Mines Dept., Bore 21, Adelaide Plains, 400 feet, Adelaidean. P. 8782 S.A. Mus.

Shell elongately ovate, rather narrow, spire depressed, only one whorl visible; columella gently convex with twelve weak plaits, the anterior two a little longer and firmer; aperture long and narrow, outer lip with numerous, fine, weak denticles. Height 5·2 mm., diameter 3·2 mm.

Remarks. Nearest to *M. septemplicata* but narrower, and it has more plaits on the columella. The holotype is of medium size for the species, some being quite 6 mm. in height.

MARGINELLA ARENA sp. nov.

Pl. xviii.

Holotype. S.A. Mines Dept., Bore 21, Adelaide Plains, 400 feet, Adelaidean. Reg. No. P. 8794 S.A. Mus.

Shell ovate, smooth, spire very slightly depressed below the top of the shell; columella convex, with six plaits; outer lip narrowly thickened at the edge and smooth; aperture, crescent-shaped. Height 3 mm., diameter 2 mm.

Remarks. Larger than *M. globiformis*, it has only three well developed columella plaits anteriorly, and three less developed plaits on the posterior half of the columella.

MARGINELLA TALLA sp. nov.

Pl. xviii.

Holotype. S.A. Mines Dept., Bore 21, Adelaide Plains, 400 feet, Adelaidean. Reg. No. P. 8796 S.A. Mus.

Shell narrowly ovate, spire a little exsert; body whorl narrow, rounded at the shoulder; columella straight, with four folds, the anterior three fairly strong and oblique, the posterior one weaker and slightly oblique; outer lip narrowly thickened and smooth at the edge, slightly sinuous, posteriorly arched, meeting the body whorl at the top. Height 4 mm., diameter 3 mm.

Remarks. Almost like a miniature *M. inermis* but with a taller spire, outer lip with smooth, thickened edge.

MARGINELLA PERA sp. nov.

Pl. xvii.

Holotype. Vict., Muddy Creek, Lower Beds. Reg. No. P. 8786 S.A. Mus.

Shell small, ovate, spire small and short and smooth, columella with four plaits, outer lip moderately thickened with about sixteen regular, minute denticles, body whorl rounded at the shoulder. Height 3·3 mm., width 2 mm.

Remarks. The type specimen described here as *M. pera* sp. nov. was in the W. L. May Collection identified as *M. kitsoni*. The present species differs from *M. kitsoni* in being narrower and having a comparatively smaller body whorl, while the columella plaits are differently situated.

MARGINELLA PALLA sp. nov.

Pl. xviii.

Holotype. Tate Mus., University of Adelaide, Adelaide Bore, Janjukian.

Shell small, pyriform, spire short, obtuse; body whorl angulate and weakly axially plicate at the shoulder; penultimate whorl also axially plicate at the shoulder; columella plaits four; outer lip angulate posteriorly, the inner edge numerously denticulate. Height 3·2 mm., diameter 2·4 mm.

Remarks. The holotype and other specimens were on the same tablet as the holotype and paratypes of *M. aldingae*. *M. palla* is smaller and has a denticulate, not smooth, outer lip.

MARGINELLA MALA sp. nov.

Pl. xviii.

Holotype. Aldinga, Lower Beds. Reg. No. P. 4016 S.A. Mus.

Shell volutiform, spire rather short; body whorl angled at the shoulder, smooth, solid, polished; columella a little convex above, slightly concave below where there are five plaits, the anterior four having a duplex formation, the posterior plait weaker and single; outer lip slightly convex, well thickened at the margin and denticulate on the inner edge. Height 9 mm., diameter 6 mm.

Remarks. A rather distinct species. Somewhat like *M. muscaroides* but larger and with different aperture features.

MARGINELLA CHARMA sp. nov.

Pl. xviii.

Holotype. S.A. Dept. of Mines., Bore 28, Adelaide Plains, 360 feet, Adelaidean. Reg. No. P. 8783 S.A. Mus.

Shell rather thick, somewhat "*Cassis*"-shaped, body whorl smooth, spire short; columella concave anteriorly with four strong, narrow, well-spaced plaits grouped at the anterior third; the anterior plait strong and continuing into the thickened outer lip which is obsoletely irregularly denticulate within. Height 4 mm., width 3 mm.

Remarks. *M. charma* recalls *M. cassida*, but in the latter species the spire is longer, the shell narrower and the outer lip is not denticulate.

MARGINELLA CASSIDA sp. nov.

Pl. xviii.

Holotype. S.A. Dept. of Mines, Bore 21, Adelaide Plains, 400 feet, Adelaidean. Reg. No. P. 8789 S.A. Mus.

Shell rather thick ovate, spire moderate in length, body whorl rounded at the shoulder, not angulate, smooth and polished; columella almost straight; with four narrow though moderately well-developed plaits, the posterior one almost horizontal; outer lip narrowly thickened, not denticulate. Height 5 mm., diameter 3 mm.

Remarks. The species is somewhat like *M. strombiformis* but it is a wider shell with smooth outer lip.

MARGINELLA SAGMA sp. nov.

Pl. xviii.

Holotype. S.A. Dept. of Mines, Bore 65, Adelaide Plains, 395 feet, Adelaidean. Reg. No. P. 8798 S.A. Mus.

Shell rather thick, smooth, polished, pyriform—ovate; spire slightly exsert, of three small whorls, sharp at the apex; columella a little concave anteriorly, with three strong oblique plaits and a fourth plait, a little away from the others, less strongly formed and horizontal; outer lip thickened at the edge where it is smooth; aperture of medium opening and slightly sigmoid. Height 4·5 mm., diameter 3 mm.

Remarks. *M. sagma* is probably nearer to *M. cassida* than to any other species. It differs in being wider, having a more shouldered body whorl, and in the disposition of the plaits.

MARGINELLA CRISTA sp. nov.

Pl. xviii.

Holotype. S.A. Mines Dept., Weymouth's Bore, Adelaide Plains, 450 feet, Adelaidean. Reg. No. P. 8791 S.A. Mus.

Shell small, elongate, fusiform, smooth; with a long spire and blunt protoconch; body whorl angled just below the suture, narrow and slightly convex anteriorly where there is a slight thickening; columella a little concave, with four plaits increasing somewhat in strength posteriorly; outer lip narrowly thickened at the margin and finely denticulate within; a larger denticle terminates the series of denticles on the lip posteriorly. Height 4·8 mm., diameter 2 mm.

Remarks. The species described here is smaller than *M. wentworthi* and has a long spire with a notably blunt protoconch. *M. altispira* also recalls this new species in the long spire and large denticle at the posterior end of the outer lip.

SUMMARY OF TERTIARY SPECIES.

GROUP A.

M. kalimnae Chapman and Crespin 1933. No. 1 Bore, Parish of Bumberrah, East Gippsland, Vict., 80 to 90 feet, Kalimnan, Lower Pliocene. Resembles *M. muscaroides* but is much larger and the thickened margin of the outer lip is not produced into a flange-like extension as in *M. muscaroides*.

M. muscaroides Tate 1878. Muddy Creek, Lower Beds. Shell volutiform, outer lip smooth, columella with four plaits. The species is like a small *M. muscaria* but has a less calloused outer lip, spreading over the penultimate whorl and base of the shell giving a flattened appearance and a varicose margin in the left side.

M. wentworthi Tenison Woods 1877. Table Cape. Ovate, lanceolate, outer lip dentate, columella with four plaits. Differs from *M. muscaria* in shape and apertural features.

M. woodsi Tate 1878. Muddy Creek, Lower Beds. Ovate, solid, spire short obtuse, outer lip denticulate, columella with five plaits. Somewhat intermediate between *M. wentworthi* and *M. muscaroides*, but distinguished by its shorter spire and five plaited columella.

M. atkinsoni May 1922. Table Cape. Broadly fusiform, smooth, whorls four, much rounded, spire exsert about one-third the length of the shell, broadly shouldered but tapering narrowly anteriorly, columella with four strong plaits, outer lip curved, very heavily thickened, denticulate with about twelve irregular denticles. Broader than *M. wentworthi*, whorls more rounded, outer lip more heavily variced. There is a variant with a more squat form and massive lip, from Table Cape, recalling *M. inermis*.

M. corpulenta May 1922. Table Cape. Broadly pyriform, spire elevated, protoconch mamillated, whorls four, well rounded, broadly shouldered, columella convex above, excavate below, with four thin plaits, outer lip thick, rounded, weakly denticulate within. Related to *M. atkinsoni* but broader, and has weakly developed denticles on the outer lip.

M. subquinquidens May 1922. Table Cape. Broadly fusiform with a prominent blunt-topped spire, whorls four, rounded not shouldered, columella with five strong plaits, fourth plait, next to the posterior one, less well developed, sometimes absent, outer lip thickened, smooth within. This fossil is like a miniature of the Recent *M. muscaria.*

M. regula sp. nov. Aldinga, Lower Beds. Related to *M. muscaroides* but larger and having a strongly denticulate outer lip.

M. mala sp. nov. Aldinga, Lower Beds. Somewhat like *M. muscaroides* in shape but much bigger.

GROUP B.

M. octoplicata Tenison Woods 1877. Table Cape. Pyriform, spire scarcely visible, columella with eight plaits, anterior valid, scarcely oblique, the posterior four weak; outer lip thickened, very regularly denticulate with twelve raised linear teeth. The body whorl has distinct striated growth lines vaguely recalling *M. turbinata.*

M. aldingae Tate 1878. Lower Beds. Fusiformly ovate, body whorl axially plicate, outer lip smooth, columella with four plaits. Related to the Recent *M. turbinata* and *M. pattisoni.*

M. cassidiformis Tate 1878. Muddy Creek, Lower Beds. Rather ventricose "*Cassis*"-shaped with plications on the shoulder of the body whorl, outer lip smooth, columella with four plaits. Probably related to *M. aldingae* but differing markedly in shape and apertural features. It is also a little like *M. pattisoni.*

M. strombiformis Tenison Woods 1877. Table Cape. Ovate, narrowed anteriorly, spire short obtuse, whorls four, outer lip dentate, columella with four plaits. Distinguished by the conspicuously thickened outer lip which is produced posteriorly.

M. praeformicula Chapman and Gabriel 1914. Mallee Bore, Kalimnan. Volutiform, solid, spire medium height, exserted. Most closely allied to *M. formicula,* but there are fewer plications on the shoulder of the body whorl.

M. charma sp. nov. Adelaidean. This species has a shorter spire than *M. cassida* and the columella is concave anteriorly.

M. cassida sp. nov. Adelaidean. Related to *M. strombiformis* but has a shorter spire and smooth outer lip.

M. palla sp. nov. Adelaide Bore, Janjukian. This species has the shape of *M. aldingae* but it is a little smaller and has a denticulate outer lip.

GROUP C.

M. altispira May 1922. Table Cape. Broadly fusiform with a tall blunt-topped spire, columella concave, with four strong plaits, outer lip much thickened, having a strong tubercle within at the upper third. It resembles the recent *M. allporti*, but the fossil is smaller and has a more exsert spire.

M. meta sp. nov. Adelaidean. The spire is shorter in *M. meta* than in *M. altispira* from Table Cape.

GROUP D.

M. hordeacea Tate 1878. Aldinga, Upper Beds. Broadly ovate, spire short, obtuse, outer lip very thick, strongly channelled above, inner edge smooth, with four strong columella plaits. Apparently related to *M. connectans* but more ovate and larger.

M. physa sp. nov. Adelaidean 320′ somewhat like *M. hordeacea* but distinctly more globose.

M. rotunda May 1922. Table Cape. Small, roundly pyriform, spire scarcely exserted, aperture as high as the shell, columella with three plaits, and two or three much smaller plaits or denticles above, outer lip rounded, strongly thickened, smooth within. The species was compared by May with *M. octoplicata* but it is probably more closely related to the recent *M. lubrica* Petterd. *M. octoplicata* has twelve denticulations on the outer lip.

M. kitsoni Chapman 1922. Torquay, Vict. Shell small, subovate, with rounded and gently graded shoulder; spire short, of three whorls, body whorl faintly marked with growth striae, columella with four plaits, outer lip rather thin, obsoletely denticulate. The species is rather like *M. shorehami* which has seven and not four columella plaits.

M. pera sp. nov. Muddy Creek, Lower Beds. Narrower and with a smaller body whorl than *M. kitsoni*.

GROUP E.

M. septemplicata Tate 1878. Muddy Creek, Lower Beds. Stoutly ovate, spire immersed, outer lip denticulated within, columella with seven strong plaits. The species is rather like those of the West African genus *Persicula*. The nearest Recent species appears to be *M. cymbalum*.

M. globiformis Chapman and Crespin 1928. Mitchell River, Miocene. Roundly ovate or subpyriform, spire immersed, outer lip thin, rounded and smooth, columella with five plaits. It recalls *M. multidentata* but the Recent species has a denticulated outer lip and nine columella plaits.

M. moana Ludbrook 1941. Abattoirs Bore, Adelaidean. Thick, pyriform, spire immersed, apical portion depressed aperture long and narrow, outer lip faintly denticulated within, columella with five plaits. A pear-shaped species close to *M. globiformis*. The holotype specimen figured here has five plaits and not four as originally described by the author of the species. The fifth posterior plait is less developed than the other four.

GROUP G.

M. micula Tate 1878. Muddy Creek, Lower Beds. Smooth, conically ovate, spire very small and obtuse, body whorl gibbous over the suture and constricted, attenuate anteriorly, outer lip minutely denticulated, aperture wide, curved, columella with four plaits. Somewhat like the Recent *M. weedingi* in shape and general features.

M. inermis Tate 1878. Muddy Creek, Lower Beds. Pyriform, attenuated anteriorly, spire very short, aperture strongly arched posteriorly, outer lip slightly variced, edge thin and denticulated, columella with four plaits. This species is related to *M. micula* and the Recent *M. weedingi*. It is distinguished from other Tertiary species by the pyriform shape, though this pyriform or triangular shape is characteristic of Group G.

M. winteri Tate 1878. Muddy Creek, Lower Beds. Narrowly ovate, spire exserted, subacute, aperture triangular, moderately wide in front, outer lip flexuous, thinly but broadly thickened and somewhat inflected, denticulated with about thirty small obtuse denticles, columella with five plaits. I would regard this species as closely related to the Recent *M. laevigata* but is larger and has five plaits on the columella.

M. doma sp. nov. Adelaidean. The species recalls *M. moana* but it is larger and the outer lip in the present species rises to the level of the spire but not above.

M. arena sp. nov. Adelaidean. This is probably related to *M. globiformis* but it is larger and has only three fully developed columella plaits and one posterior miniature one, well inside the aperture. It is something like the Tasmanian deep water Recent species *M. erma*.

M. propinqua Tate 1878. Muddy Creek, Lower Beds. Shell thick, ovate cylindrical, transversely streaked with white, aperture triangular, with a broad milk-white varix strongly denticulated on the bevelled edge, columella five plaits. Related to *M. winteri* but has a shorter spire and more tumid body whorl.

M. crassidens Chapman and Crespin 1928. Gippsland Lakes, Kalimnan. Polished, incrassate, volutiform, spire of medium height, body whorl broad at the shoulder, tapering anteriorly, outer lip finely denticulate, channelled at the anterior end, columella with four plaits. Related to *M. micula* but the spire is higher and the apex sharper.

M. clima sp. nov. Adelaidean. Probably the Pliocene relative of the Miocene *M. micula* which is a smaller shell with a more gradate spire.

M. metula sp. nov. Adelaidean. The species is nearest to *M. septemplicata* but it is narrower and has more numerous plaits on the columella.

M. talla sp. nov. Adelaidean. Differs from *M. inermis* in being smaller and having a shorter spire and smooth thickened outer lip.

M. elisia sp. nov. Bird Rock, Vict. Slightly larger and with a more exsert blunt topped spire than *M. micula*.

SUMMARY.

This paper presents a complete revision of Australian Recent and Tertiary Marginellidae. Recent species number 119 and Tertiary 38, here arranged into seven groups. Sixteen new Tertiary species are added, some of them having been taken from bores in the Adelaide Plains. Four new Recent species are also added.

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EXPLANATION OF PLATES.

Plate xvii.

Marginella muscaroides Tate (× 4·7).
Marginella wentworthi Tenison Woods (× 5·8).
Marginella micula Tate (× 12).
Marginella inermis Tate (× 2·66).
Marginella corpulenta May (× 7·33).
Marginella aldingae Tate (× 11·13).
Marginella altispira May (× 6·66).
Marginella atkinsoni May (× 6·66).
Marginella strombiformis Tenison Woods (× 10).
Marginella septemplicata Tate (× 3·33).
Marginella pera sp. nov. (× 12·66).
Marginella winteri Tate (× 3·33).
Marginella moana Ludbrook (× 6·66).
Marginella propinqua Tate (× 3·33).
Marginella hordeacea Tate (× 6·66).
Marginella cassidiformis Tate (× 8).
Marginella subquinquidens May (× 6).
Marginella rotunda May (× 13·33).
Marginella woodsi Tate (× 3·33).
Marginella clisia sp. nov. (× 10).

Plate xviii.

Marginella globiformis Chapman and Crespin (× 14·73).
Marginella kalimnae Chapman and Crespin (× 2·57).
Marginella crassidens Chapman and Crespin (× 3·67).
Marginella meta sp. nov. (× 8·33).
Marginella octoplicata Tenison Woods (× 14·73).
Marginella praeformicula Chapman and Gabriel (× 3·93).
Marginella physa sp. nov. (× 8·33).
Marginella regula sp. nov. (× 4·47).
Marginella elima sp. nov. (× 6·67).
Marginella palla sp. nov. (× 10·21).
Marginella cassida sp. nov. (× 6·4).
Marginella doma sp. nov. (× 6·7).
Marginella arena sp. nov. (× 11·13).
Marginella charma sp. nov. (× 7·9).
Marginella metula sp. nov. (× 6·4).
Marginella sagma sp. nov. (× 7·33).
Marginella talla sp. nov. (× 6·33).
Marginella kitsoni Chapman (× 12·47).
Marginella mala Tenison Woods (× 3·87).
Marginella crista sp. nov. (× 7·4).

Plate xix.

Marginella muscaria Lamarck. Tas., E. Coast (× 1·9).
Marginella johnstoni Petterd. S.A., Kangaroo Island (× 3·8).
Marginella tasmanica Tenison Woods. Tas., Long Bay (× 3·4).
Marginella tridentata Tate. S.A., Aldinga (× 4·6).
Marginella mixta Petterd. Tas., E. Coast (× 4·5).
Marginella pygmaeoides Singleton. S.A., Kangaroo Island (× 3·6).
Marginella schoutanica May. S.A., Beachport, 40 fathoms (× 8·3).
Marginella consobrina May. Tas., Cap Pillar, 100 fathoms (× 6·7).
Marginella vercoi May. Tas., Cape Pillar, 100 fathoms (× 4·2).
Marginella sica sp. nov. W.A., Eucla, 200 fathoms (× 6·7).
Marginella inconspicua Sowerby. N.S.W., Ballina (× 4·7).
Marginella victoriae Gatliff and Gabriel. Vict., Western Port (× 8·2).
Marginella translucida Sowerby. N.S.W.(× 3·5).
Marginella alta Watson. Q., Raine Island, 155 fathoms (× 7·9).
Marginella carinata Smith. N.S.W., Sydney, 410 fathoms (× 6·5). (× 6·5).
Marginella fusiformis Hinds. Straits of Malacca (× 3·3).
Marginella formicula Lamarck. Tas., Maria Island (× 3).
Marginella georgiana May. Tas., Southport (× 3·6).
Marginella praetermissa May. Tas., E. Coast (× 2).
Marginella leia Cotton. S.A., Beachport, 150 fathoms (× 3·8).

Plate xx.

Marginella newmanae sp. nov. W.A., Esperance (× 3·7).
Marginella kemblensis Hedley. N.S.W., Port Kembla, 63–75 fathoms (× 4·2).
Marginella patria sp. nov. W.A., Hopetoun, 35 fathoms (× 8).
Marginella walkeri Smith. N.W.A., Baudin Island (× 2·7).
Marginella tomliniana May. Tas., Thouin Bay, 40 fathoms (× 16·7).
Marginella multidentata May. Tas., d'Entrecasteaux Channel, 10 fathoms (× 16·7).
Marginella baca sp. nov. Tas., Cape Pillar, 100 fathoms (× ·73).
Marginella columnaria Hedley and May. Tas., Cape Pillar, 100 fathoms (× 4·7).
Marginella olivella Reeve. N.S.W., Port Jackson (× 4).
Marginella petterdi Beddome. Tas., Kelso Bay, Tamar River, 17 fathoms (× 6·8).
Marginella laevigata Brazier. Q., Darnley Is., Torres Strait, 10 fathoms (× 5·2).
Marginella mustellina Angas. N.S.W., Port Jackson (× 4·5).
Marginella mayi Tate. Schouten Is., 40 fathoms (× 3).
Marginella maugeana Hedley. Tas., Cape Pillar, 100 fathoms (× 2·7).
Marginella geminata Hedley. N.S.W., Cape Byron (× 4·7).
Marginella subbulbosa Tate. S.A., Port Lincoln (× 8).
Marginella cylichnella May. Tas., Cape Pillar, 100 fathoms (× 16).
Marginella erma sp. nov. Tas., Cape Pillar, 100 fathoms (× 16·7).
Marginella columnaria Hedley and May. Tas., Cape Pillar, 100 fathoms (× 4·5).
Marginella weedingi sp. nov. S.A., Backstairs Passage, 20 fathoms (× 4·7).